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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

01/15/98  
1569 U.S. PTO

Applicant: Richard Brown  
Docket: 30582.6-US-01  
Title: PORTABLE HELIPAD

CERTIFICATE UNDER 37 CFR 1.10  
'Express Mail' mailing label number: EM297285167US  
Date of Deposit: January 15, 1998  
I hereby certify that this paper or fee is being deposited with the United States Postal Service 'Express Mail Post Office To Addressee' service under 37 CFR 1.10 and is addressed to the Assistant Commissioner for Patents, Washington, D.C. 20231.  
By: Amber Stewart  
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Washington, D.C. 20231

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- ☒ Utility Patent Application: Spec. 9 pgs; 31 claims; Abstract 1 pg.  
The fee has been calculated as shown below in the 'Claims as Filed' table.
- ☒ 7 sheets of formal drawings
- ☒ Verified statement to establish small entity status
- ☒ A signed Combined Declaration and Power of Attorney
- ☒ A check in the amount of \$516.00 to cover the Filing Fee
- ☒ Return postcard

CLAIMS AS FILED

Number of Claims Filed	In Excess of:	Number Extra	Rate	Fee
Basic Filing Fee				\$395.00
Total Claims				
31	20	11	x 11.00	= \$121.00
Independent Claims				
2	3	0	x 41.00	= \$0.00
MULTIPLE DEPENDENT CLAIM FEE				\$0.00
TOTAL FILING FEE				\$516.00

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MERCHANT, GOULD, SMITH, EDELL,  
WELTER & SCHMIDT  
Westwood Gateway II, Suite 400  
11150 Santa Monica Blvd.  
Los Angeles, CA 90025  
(310) 445-1140

By: Charles Berman  
Name: Charles Berman  
Reg. No.: 29,249  
Initials: CB/as

PORTABLE HELIPAD

FIELD OF THE INVENTION

This invention relates to helicopter landing pads, and more particularly to portable landing pads adapted for transport by a helicopter.

10 BACKGROUND, PRIOR ART

In helicopter logging and mineral exploration operations, it is often necessary to land a helicopter in remote areas that are characterised by uneven or multi-pitched terrain that is at least partially covered with obstacles such as boulders or stumps. Accordingly, helicopter landing pads must typically be constructed at such remote locations before the helicopter logging or mineral exploration operations may begin.

It is standard procedure in the helicopter logging and mining industries to construct helicopter landing pads on-site from timber and other materials that may be available. However, such wooden landing pads are difficult and very time consuming to build. In some cases, it is additionally necessary to first collect and retrieve suitable timber and materials over a large area before the building of the helicopter landing pad may be commenced. Significant quantities of timber and materials may be required, since (depending upon the terrain) a wooden landing pad may have to be tiered in several stages in order to allow for proper clearance for the helicopter rotor. Owing to the variability in timber supplies and other materials suitable for the construction of a wooden helicopter landing pad that one may find at any given remote location, wooden landing pads are of non-uniform construction; this leads to an increased likelihood that a given wooden landing pad may be insufficiently strongly constructed and may collapse.

Previously known portable helicopter landing pads have been proposed for use in the helicopter logging and mining industries and in other operations where it may be necessary to land a helicopter on uneven or multi-pitched terrain covered with obstacles, but have been found to be unsuitable for use in such rugged terrain due primarily to their cost, complexity, and/or poor ground clearance. In U.S. Pat. No. 3,489,380, Vanderlip discloses a portable helicopter landing pad that is designed to permit the landing of troops and supplies in densely foliated areas, but that must be set upon a relatively level clearing if one is to be able to land the helicopter itself upon it. Soloy, in U.S. Pat. No. 4,116,408, discloses a portable helicopter landing pad having a folding deck, which must be folded before the landing pad may be transported by a helicopter. Telescopically extensible legs are provided for in the Soloy pad in order that it may be set upon non-level ground; however, since a folding deck is more susceptible to unwanted collapse, the foldable deck structure requires the use of multiple braces between the legs in a configuration that significantly interferes with ground clearance, thereby rendering the Soloy pad unsuitable for use in rugged terrain. In addition, since it is often advantageous in helicopter logging and mining operations to quickly and repeatedly relocate a portable helicopter landing pad (as the worksite progresses), the requirement that the Soloy pad be folded before it may be transported limits its utility in such operations.

#### SUMMARY OF THE INVENTION

These disadvantages may be overcome by providing a portable helicopter landing pad of simple and economical construction that may be carried in a fully assembled state beneath a helicopter, and quickly set up over obstacles present at a remote landing site. An object of one aspect of the present invention is to provide an improved portable helipad possessing these qualities.

In accordance with one aspect of the present invention,

there is provided a portable helipad comprising a deck supported by plural legs, of which at least one is extensible. Leg braces extending from the legs connect to associated brackets (or other suitable means of attachment) within associated zones of attachment on the underside surface of the deck, thereby increasing the ground clearance of the inventive portable helipad as compared to certain prior portable helipads in which leg braces extended from one leg to another. Preferably, the associated bracket of each leg brace is located (within the associated zone of attachment of such leg brace on the underside of the deck) so as to minimize the likelihood of engagement of the deck support structure with ground obstructions. One suitable location is in the vicinity of the peripheral margin of the deck at the boundary equidistant between the leg to which such leg brace is attached and the nearest other leg. Advantageously, the leg braces are in compression under load, in order that some portion of any load applied to the portable helipad is supported by the leg braces. This allows for the use of less material in the construction of the deck, since all load is not concentrated in the vicinity of the legs. Reduced deck material allows for the construction of a lighter portable helipad. Conveniently, the legs and leg braces of the portable helipad are releasably secured to the deck by pins or the like in order that the portable helipad may be rapidly assembled and disassembled without the use of tools.

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In accordance with a further aspect of the present invention, there is provided the combination of a helicopter and a portable helipad comprising a deck supported by a suitable number of legs, of which at least one is extensible. Leg braces extending from the legs connect to associated brackets (say) within associated zones of attachment on the underside surface of the deck. Deck engagement means on the underside of the helicopter releasably attach the portable helipad to the helicopter, and helicopter engagement means secured to the deck complement the deck engagement means. Preferably, the deck is constructed of an open-weave material so as to reduce wind loading on the portable helipad

during transport, to reduce the overall weight of the portable helipad, and to allow precipitation (primarily snow) to fall through the open-weave material so as to resist build-up (of snow) on the portable helipad when it is situated at a remote location.

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#### BRIEF DESCRIPTION OF THE DRAWINGS

In drawings which illustrate embodiments of the invention;

10 Figure 1 is a sectional side elevation view of a portable helipad forming one embodiment of the present invention with a helicopter resting thereupon;

15 Figure 2 shows the portable helipad of Figure 1 in a side elevation view;

Figure 3 is an enlarged exploded view of an extensible leg of the portable helipad of Figure 1;

20 Figure 4 is an enlarged view of a pin of the portable helipad of Figure 1;

Figure 5 is an enlarged partially sectional view of the connection between the deck and a leg of the portable helipad of Figure 1;

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Figure 6 is an enlarged view of an extensible leg brace of the portable helipad of Figure 1;

Figure 7 is an enlarged partially sectional elevation view of the ground engagement and anchoring platform of the portable helipad of Figure 1; and,

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Figure 8 is a plan view of a deck panel of the portable helipad of Figure 1.

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## DETAILED DESCRIPTION OF THE INVENTION

In Figure 1, the portable helipad illustrated and generally designated 10 includes a deck 14 supported by short 5 extensible legs 16 (one shown) and long extensible legs 18 (one shown). Short and long extensible legs are provided in order to facilitate the use of the illustrated portable helipad on sloped terrain. Short and long extensible leg braces 20 and 22 (seen as dotted lines in Figure 1) extend respectively from ground 10 engagement and anchoring platforms 26 at the distal end of each extensible leg 16 and 18 to brackets 24 fastened to the underside surface of deck 14 within the associated zones of attachment of both leg braces 20 and 22, (the associated zones of attachment being defined with respect to each leg brace as the region that 15 lies between the top of the leg to which such leg brace is connected and a boundary that is substantially equidistant from the top of that leg and the top of the nearest other leg, but not extending beyond the boundary of equidistance between the top of that leg and the top of the nearest other leg at any particular 20 point along the boundary). In the Figures, the illustrated bracket 24 is located at a point on the underside surface of deck 14 adjacent the peripheral margin of deck 14 that is substantially equidistant between short leg 16 and long leg 18. A helicopter 12 is illustrated resting on top of the portable helipad 10 as 25 deployed on sloped and multi-pitched terrain.

Although not shown in the embodiment of the invention illustrated in the drawings, it will be clear to those skilled in helipad design that not all of the legs supporting deck 14 are 30 required to be extensible; if one or more of the legs are non-extensible, the deck 14 may nevertheless in most cases be put into a generally horizontal plane regardless of the terrain upon which the portable helipad is set, by appropriate adjustment of some or all of the remaining extensible legs. It will also be clear to 35 those skilled in helipad design that leg braces 20 and 22 may advantageously be connected to brackets located at any point within

their associated zones of attachment, most preferably substantially adjacent the peripheral margin of the deck at the boundary equidistant between the leg to which such leg brace is attached and the nearest other leg.

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As is best seen in Figure 3, each extensible leg comprises an upper segment 28 which is releasably secured to deck 14 by flanges 38 (discussed further below), and a replaceably removable lower extensible segment 30 that is sized to slidingly  
10 engage the upper segment 28. Both the upper segment 28 and lower extensible segment 30 of the short extensible legs 16 are shorter than are the corresponding segments 28 and 30 of the long extensible legs 18; see Figure 2. Spaced-apart holes 32 and 34 are provided in upper segment 28 at a distance from one another that  
15 corresponds to an integral multiple of the distance between spaced-apart holes 36 provided along the entire length of lower extensible segment 30. The length of each extensible leg is fixed following longitudinal adjustment (by sliding lower extensible segment 30 relative to upper segment 28) by inserting pins 40 (Figure 4)  
20 through holes 32, 36 and 34, 36 in the upper segment 28 and lower extensible segment 30 of each extensible leg. The pins 40 may be secured in place with cotter clips (not shown), and are fastened to upper segment 28 by a chain 42 to prevent loss of same.

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Various combinations of long or short lower extensible segments 30 may be fitted to upper segments 28 of each extensible leg 16 or 18 as needed in order to maintain deck 14 in a generally horizontal plane when positioning the portable helipad over various  
30 terrain and obstacles. Figure 2 indicates the maximum and minimum slopes upon which the portable helipad may be positioned when all of the short-leg lower extensible segments 30 are used together with the short-leg upper segments 28, and all of the long-leg lower extensible segments 30 are used together with the long-leg upper  
35 segments 28.

As seen in Figures 1 and 2, deck 14 includes deck panels 44 (shown as a dotted line) releasably affixed to the upper surface of framework 46, the framework 46 comprising side I-beams 47 and plural cross I-beams 49 releasably secured together with pins 40. Deck panels 44 further comprise an open weave mesh landing surface 48 and a panel frame 50 to which mesh landing surface 48 is rigidly affixed; see Figure 8. Releasable attachment of deck panels 44 to framework 46 is accomplished by means of pins 40, which engage through holes (not shown) in the side I-beams 47 and plural cross I-beams 49 and corresponding holes (not shown) in panel frame 50. Hooks of a conventional sort (not shown) for releasable securement of the helicopter 12 to the portable helipad during shutdown (to prevent the helicopter 12 from being blown off of portable helipad 10 by strong winds) penetrate the open weave mesh landing surface 48 and are removably affixed to cross I-beams 49 with bolts (not shown). Eyes (not shown) are provided in the vicinity of the corners of deck 14 for releasably attaching portable helipad 10 to corresponding deck engagement means such as cables (not shown) of the sort conventionally used for attaching cargo to the underside of helicopter 12. Alternatively, cables (not shown) may be rigidly affixed directly to deck 14. In either cable arrangement, it will be clear to those skilled in helipad design and to those skilled in the piloting of helicopters that any forwardly disposed cables should preferably be longer than any rearwardly disposed cables, in order that the portable helipad 10 may fly level, and that a flag or other means to create drag may be releasably affixed to the portable helipad in order to prevent the portable helipad from spinning during transport.

Legs (including both the short and long extensible legs 16 and 18, and any non-extensible legs [not shown]) are releasably secured to deck 14 by pins 40 joining flanges 38 on the upper end of each leg to the free ends of side I-beams 47 and end cross I-beams 49; see Figure 5. Alternatively, it will be clear to those skilled in the art of helipad design that legs 16 and 18 may be releasably fastened to sockets (not shown) rigidly affixed to



framework 46.

As seen in Figure 6, each of the short and long extensible leg braces 20 and 22 comprises an upper brace segment 56 releasably secured to an associated bracket 24 by a pin 40 engaging threaded flange 58, and a replaceably removable lower extensible brace segment 62. A ground engagement and anchoring platform 26 is releasably secured to threaded flange 58 at the free end of lower extensible brace segment 62 by a pin 40; see Figure 10 2. Spaced-apart holes 64 and 66 are provided in upper brace segment 56 at a distance from one another that corresponds to an integral multiple of the distance between spaced-apart holes 68 provided along the entire length of lower extensible brace segment 62. The length of each extensible leg brace is determined in gross 15 by inserting pins 40 through holes 64,68 and 66,68 following longitudinal adjustment by sliding lower extensible brace segment 62 relative to upper brace segment 56. Then, further fine adjustment of the length of each leg brace (including both the short and long extensible leg braces 20 and 22, and any non- 20 extensible leg braces [not shown]) may be effected by rotating the leg brace, so as to cause the threading-in or threading-out of threaded flanges 58 at both ends of the leg brace through matingly threaded ends 70 of the leg brace. The thread pitch 72 of threaded flanges 58 and of threaded ends 70 is the same in magnitude but 25 opposite in direction at the top and bottom ends of each leg brace in order to allow for the tightening or slackening of the leg brace by rotation as described.

Figure 7 shows the ground engagement and anchoring 30 platforms 26 that are attached to the distal end of legs 16 and 18 (and any non-extensible legs [not shown]), and to leg braces 20 and 22 by pins 40. Pin 40 is engaged to a platform 26 and a leg through hole 74, and a separate pin 40 engages a threaded flange 58 of a leg brace 20 or 22 through hole 76. The ground engagement 35 and anchoring platforms 26 are perforated at points 78 to facilitate spiking to stumps or the ground (not shown) upon which



What is claimed is:

1. A portable helipad, comprising
  - a deck having a top surface, an underside surface, and a peripheral margin;
  - a plurality of legs depending from the deck for supporting the deck, the plurality of legs comprising at least one extensible leg;
  - and a plurality of leg braces, at least one leg brace extending from each one of the plurality of legs to an attachment means within an associated zone of attachment on the underside surface of the deck, said zone being defined for each such leg by the region that lies between the top of such leg and a boundary that is substantially equidistant from the top of that leg and the top of the nearest other leg, said zone not extending beyond the boundary of equidistance between that leg and the nearest other leg.
2. A portable helipad as defined in claim 1, wherein at least one of the leg braces is in compression under load, in order that a lesser amount of material may be used to construct the deck while maintaining a preselected minimum deck load bearing capacity.
3. The portable helipad of claim 1, wherein all of the leg braces are in compression under load, in order that a lesser amount of material may be used to construct the deck while maintaining a preselected minimum deck load bearing capacity.
4. The portable helipad of claim 1, wherein the overall portable helipad structure is sufficiently light to be carried in an assembled state by a helicopter of a size suitable for landing on the portable helipad.
5. The portable helipad of claim 2, wherein the overall portable helipad structure is sufficiently light to be carried in an

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assembled state by a helicopter of a size suitable for landing on the portable helipad.

6. The portable helipad of claim 3, wherein the overall portable helipad structure is sufficiently light to be carried in an assembled state by a helicopter of a size suitable for landing on the portable helipad.
7. The portable helipad of claim 2, wherein the shear stress on each leg due to the corresponding leg brace load is less than a preselected maximum.
8. The portable helipad of claim 3, wherein the shear stress on each leg due to the corresponding leg brace load is less than a preselected maximum.
9. The portable helipad of claim 1, wherein each extensible leg comprises an upper segment secured to the deck, and a lower extensible segment longitudinally adjustable relative to the upper segment, and wherein at least one of the plurality of leg braces is extensible, each said extensible leg brace extending from the lower extensible segment of an extensible leg to its associated attachment means.
10. The portable helipad of claim 9, wherein the lower extensible segment of each extensible leg is replaceably removable from the upper segment, such that it may be interchanged with a lower extensible segment of different length, and wherein any leg braces extending from the lower extensible segment of each extensible leg are replaceably removable from their respective associated attachment means.
11. The portable helipad of claim 1, wherein the legs and leg braces are releasably secured to the deck by pin means, in order that the portable helipad may be rapidly assembled and disassembled without the use of tools.

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12. The portable helipad of claim 9, wherein the extensible legs and extensible leg braces are adjustable by pin means, in order that the portable helipad may rapidly be adjusted to suit the terrain upon which it is set without the use of tools.
13. The portable helipad of claim 10, wherein the extensible legs and extensible leg braces are adjustable by pin means, in order that the portable helipad may rapidly be adjusted to suit the terrain upon which it is set without the use of tools.
14. The portable helipad of claim 11, wherein the extensible legs and extensible leg braces are adjustable by pin means, in order that the portable helipad may rapidly be adjusted to suit the terrain upon which it is set without the use of tools.
15. A portable helipad as defined in claim 1, wherein at least one of the legs is shorter than at least one of the remaining legs comprising the plurality of legs, in order that the helipad may be used on a slope.
16. A portable helipad as defined in claim 1, wherein the legs depend substantially vertically downward from the deck, and at least one leg is adjustable in order to maintain the deck in a substantially horizontal plane.
17. A portable helipad as defined in claim 1, wherein the deck is permeable to precipitation and wind.
18. The portable helipad of claim 17, in which the deck is constructed of an open weave material for substantial reduction of snow and wind loading.
19. The portable helipad of claim 17, additionally comprising removable helicopter restraint means extending through the top



attachment means for each leg brace is located substantially at the peripheral margin of the deck at the boundary equidistant between the leg to which such leg brace is attached and the nearest other leg.

27. The portable helipad of claim 1, wherein the associated attachment means for all leg braces is located substantially at the center of the underside surface of the deck.
28. The portable helipad of claim 11, wherein the associated attachment means for all leg braces is located substantially at the center of the underside surface of the deck.
29. A portable helipad as defined in claim 1, comprising at least three legs and associated leg braces.
30. The combination of a helicopter and a portable helipad removably transportable in a fully assembled state by said helicopter, said portable helipad comprising
  - a deck;
  - a plurality of legs depending from the deck for supporting the deck; the plurality of legs comprising at least one extensible leg;
  - a plurality of leg braces, at least one leg brace extending from each one of the plurality of legs to an attachment means within an associated zone of attachment on the underside surface of the deck defined by the region that lies between the leg and a boundary that is substantially equidistant from that leg and any other leg, but not beyond the boundary of equidistance between that leg and any other leg;
  - deck engagement means attached to the underside of the helicopter for releasably attaching the portable helipad in transport position; and,
  - helicopter engagement means complementing the deck engagement means for releasably attaching the deck to the underside of the helicopter.

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31. The combination of claim 30, wherein the deck of the portable helipad is constructed of an open weave material for reduced weight and substantial reduction in wind loading.

Jan 14<sup>th</sup> 1998  
Date

Richard Brown  
Richard Brown

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ABSTRACT

A portable helipad adapted for use in rough terrain and for transport in a fully assembled state by a helicopter. A deck is supported by legs depending from the deck. Leg braces extending from the legs connect to brackets within an associated zone of attachment on the underside surface of the deck. The helicopter releasably engages the portable helipad for transport. The legs and associated leg braces are preferably extensible to permit the deck to be levelled over uneven terrain.

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Amber Stewart  
(printed name)  
Amber Stewart  
(Signature)

DECLARATION AND POWER OF ATTORNEY

As the or an inventor named below, I hereby declare that:

My residence, post office address and citizenship are accurately stated below next to my name.

I truly believe that I am

  X   the original, first and sole inventor

       one of the original, first and only joint inventors  
named below

of the invention entitled:

**PORTABLE HELIPAD**

which is described and claimed in:

  X   the attached specification; or,  
       the specification in application Serial No.  
                    , filed                     ; or,  
                     as amended on                     .

I hereby state that I have reviewed and understand, to the best of my ability to do so, the contents of the aforementioned specification, including the claims.

I acknowledge my duty to disclose information which is material to the examination of this application in accordance with Title 37, Code of Federal Regulations, §1.56(a), copy appended as Appendix A hereto.

I hereby claim foreign priority benefits under Title 35, United States Code, §119 of any foreign application(s) for patent or inventor's certificate listed below, and have also identified below any foreign application(s) for patent or inventor's

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certificate having a filing date before that of the application on which priority is claimed:

<u>Prior Foreign Application(s)</u>	<u>Priority Claimed</u>
2,197,023      Canada      7 February 1997	Yes
(Number)	(Country)      (Date of Filing)

I hereby appoint the following attorney(s) and/or agent(s) to prosecute this application and to transact all business in the Patent and Trademark Office connected therewith:

<u>NAME</u>	<u>Registration. No.</u>
Robert H. Barrigar	26,125
W. Dennis Moss	27,749
Peter R. Hammond	27,524
Lynn S. Cassan	32,378
P. Scott Maclean	39,543

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that wilful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such wilful false statements may jeopardize the validity of the application or any patent issuing thereon.

Full name of sole  
or first Inventor:

Richard Brown

Inventor's signature:

Date:

*Richard Brown*  
*Jan 14<sup>th</sup>/98*

Residence Address: P.O. Box 801  
Gold River, B.C.  
V0P 1G0

Citizenship: Canadian

Post Office Address: P.O. Box 801  
Gold River, B.C.  
V0P 1G0

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## APPENDIX A

### Applicant's Duty to Disclose Information

#### § 1.56 Duty to disclose information material to patentability.

(a) A patent by its very nature is affected with a public interest. The public interest is best served, and the most effective patent examination occurs when, at the time an application is being examined, the Office is aware of and evaluates the teachings of all information material to patentability. Each individual associated with the filing and prosecution of a patent application has a duty of candor and good faith in dealing with the Office, which includes a duty to disclose to the Office all information known to that individual to be material to patentability as defined in this section. The duty to disclose information exists with respect to each pending claim until the claim is cancelled or withdrawn from consideration, or the application becomes abandoned. Information material to the patentability of a claim that is cancelled or withdrawn from consideration need not be submitted if the information is not material to the patentability of any claim remaining under consideration in the application. There is no duty to submit information which is not material to the patentability of any existing claim. The duty to disclose all information known to be material to patentability is deemed to be satisfied if all information known to be material to patentability of any claim issued in a patent was cited by the Office or submitted to the Office in the manner prescribed by §§ 1.97(b)-(d) and 1.98. However, no patent will be granted on an application in connection with which fraud on the Office was practiced or attempted or the duty of disclosure was violated through bad faith or intentional misconduct. The Office encourages applicants to carefully examine:

- (1) prior art cited in search reports of a foreign patent office in a counterpart application, and
- (2) the closest information over which individuals associated with the filing or prosecution of a patent application believe any pending claim patentably defines, to make sure that any material information contained therein is disclosed to the Office.

(b) Under this section, information is material to patentability when it is not cumulative to information already of record or being made of record in the application, and

- (1) It establishes, by itself or in combination with other information, a prima facie case of unpatentability of a claim; or
- (2) It refutes, or is inconsistent with, a position the applicant takes in:
  - (i) Opposing an argument of unpatentability relied on by the Office, or
  - (ii) Asserting an argument of patentability.

A prima facie case of unpatentability is established when the information compels a conclusion that a claim is unpatentable under the preponderance of evidence, burden-of-proof standard, giving each term in the claim its broadest reasonable construction consistent with the specification, and before any consideration is given to evidence which may be submitted in an attempt to establish a contrary conclusion of patentability.

(c) Individuals associated with the filing or prosecution of a patent application within the meaning of this section are:

- (1) Each inventor named in the application;
- (2) Each attorney or agent who prepares or prosecutes the application; and
- (3) Every other person who is substantively involved in the preparation or prosecution of the application and who is associated with the inventor, with the assignee or with anyone to whom there is an obligation to assign the application.

(d) Individuals other than the attorney, agent or inventor may comply with this section by disclosing information to the attorney, agent, or inventor.

IN THE UNITED STATES PATENT & TRADEMARK OFFICE

Inventor: Richard Brown  
 Title: PORTABLE HELIPAD  
 Filed: Herewith  
 Date: 15 January, 1998

To: The Commissioner of Patents & Trademarks  
 Washington, D.C.  
 20231

Dear Sir:

ASSOCIATE POWER OF ATTORNEY

Please recognize the following attorneys as my  
 associate attorneys in respect of this application:

<u>NAME</u>	<u>REGISTRATION No.</u>	<u>NAME</u>	<u>REGISTRATION No.</u>
Adriano, Sarah B.	Reg. No. 34,470	Kettelberger, Denise	Reg. No. 33,924
Albrecht, John W.	Reg. No. P-40,481	Komanduri, Janaki	Reg. No. P-40,684
Batzli, Brian H.	Reg. No. 32,960	Kowalchyk, Alan W.	Reg. No. 31,535
Beard, John L.	Reg. No. 27,612	Kowalchyk, Katherine M.	Reg. No. 36,848
Beck, Robert C.	Reg. No. 28,184	Lacy, Paul E.	Reg. No. 38,946
Bejin, Thomas E.	Reg. No. 37,089	Lasky, Michael B.	Reg. No. 29,555
Berman, Charles	Reg. No. 29,249	Lindquist, Timothy A.	Reg. No. P-40,701
Bogucki, Raymond A.	Reg. No. 17,426	Lynch, David W.	Reg. No. 36,204
Bruess, Steven C.	Reg. No. 34,130	Mau, Michael L.	Reg. No. 30,087
Byrne, Linda M.	Reg. No. 32,404	McDaniel, Karen D.	Reg. No. 37,674
Canady, Karen S.	Reg. No. 39,927	McDonald, Daniel W.	Reg. No. 32,044
Carlson, Alan G.	Reg. No. 25,959	McDonald, Wendy M.	Reg. No. 32,427
Carter, Charles G.	Reg. No. 35,093	McIntyre, Iian A.	Reg. No. 40,377
Caspers, Philip P.	Reg. No. 33,227	Miller, William D.	Reg. No. 37,988
Chiapetta, James R.	Reg. No. 39,634	Mueller, Douglas P.	Reg. No. 30,300
Clifford, John A.	Reg. No. 30,247	Nasiedlak, Tyler L.	Reg. No. 40,099
Conrad, Timothy R.	Reg. No. 30,164	Nelson, Albin J.	Reg. No. 28,650
Cooper, Victor G.	Reg. No. 39,641	Orler, Anthony J.	Reg. No. P-41,232
Crawford, Robert	Reg. No. 32,122	Pauly, Daniel M.	Reg. No. 40,123
Daignault, Ronald A.	Reg. No. 25,968	Plunkett, Theodore	Reg. No. 37,209
Daley, Dennis R.	Reg. No. 34,994	Pollinger, Steven J.	Reg. No. 35,326

<u>NAME</u>	<u>REGISTRATION No.</u>	<u>NAME</u>	<u>REGISTRATION No.</u>
Dalglisch, Leslie E.	Reg. No. P-40,579	Reich, John C.	Reg. No. 37,703
Daulton, Julie R.	Reg. No. 36,414	Reiland, Earl D.	Reg. No. 25,767
Davidson, Ben M.	Reg. No. 38,424	Schmaltz, David G.	Reg. No. 39,828
DiPietro, Mark J.	Reg. No. 28,707	Schmidt, Cecil C.	Reg. No. 20,566
Edell, Robert T.	Reg. No. 20,187	Schuman, Mark D.	Reg. No. 31,197
Epp Ryan, Sandra	Reg. No. 39,667	Schumann, Michael D.	Reg. No. 30,422
Farber, Michael B.	Reg. No., 32,612	Sebald, Gregory A.	Reg. No. 33,280
Funk, Steven R.	Reg. No. 37,830	Skoog, Mark T.	Reg. No. 40,178
Gabilan, Mary Susan	Reg. No. 38,729	Smith, Jerome R.	Reg. No. 35,684
Gates, George H.	Reg. No. 33,500	Stinebruner, Scott A.	Reg. No. 38,323
Glance, Robert J.	Reg. No. P-40,620	Sumner, John P.	Reg. No. 29,114
Golla, Charles E.	Reg. No. 26,896	Sumners, John S.	Reg. No. 24,216
Gorman, Alan G.	Reg. No. 38,472	Tellekson, Daid K.	Reg. No. 32,314
Gould, John D.	Reg. No. 18,223	Underhill, Albert L.	Reg. No. 27,403
Gresens, John J.	Reg. No. 33,112	Vandenburgh, J. Derek	Reg. No. 32,179
Hamre, Curtis B.	Reg. No. 29,165	Welter, Paul A.	Reg. No. 20,890
Hillson, Randall A.	Reg. No. 31,838	Williams, Douglas J.	Reg. No. 27,054
Hollingsworth, Mark A.	Reg. No. 38,491	Wood, Gregory B.	Reg. No. 28,133
Johnston, Scott W.	Reg. No. 39,721	Xu, Min S.	Reg. No. 39,536
Kastelic, Joseph M.	Reg. No. 37,160		

Please address all telephone calls to Charles Berman  
at telephone no. (310) 445-1140.

Please address all correspondence to:

Merchant, Gould, Smith, Edell  
Welter & Schmidt  
Westwood Gateway II, Suite 400  
1150 Santa Monica Blvd.  
Los Angeles, CA 90025-3395

Respectfully submitted,

By: \_\_\_\_\_

Robert H. Barrigar  
Registration No.: 26125

Vancouver, B.C., Canada  
13 January, 1998

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Figure 1

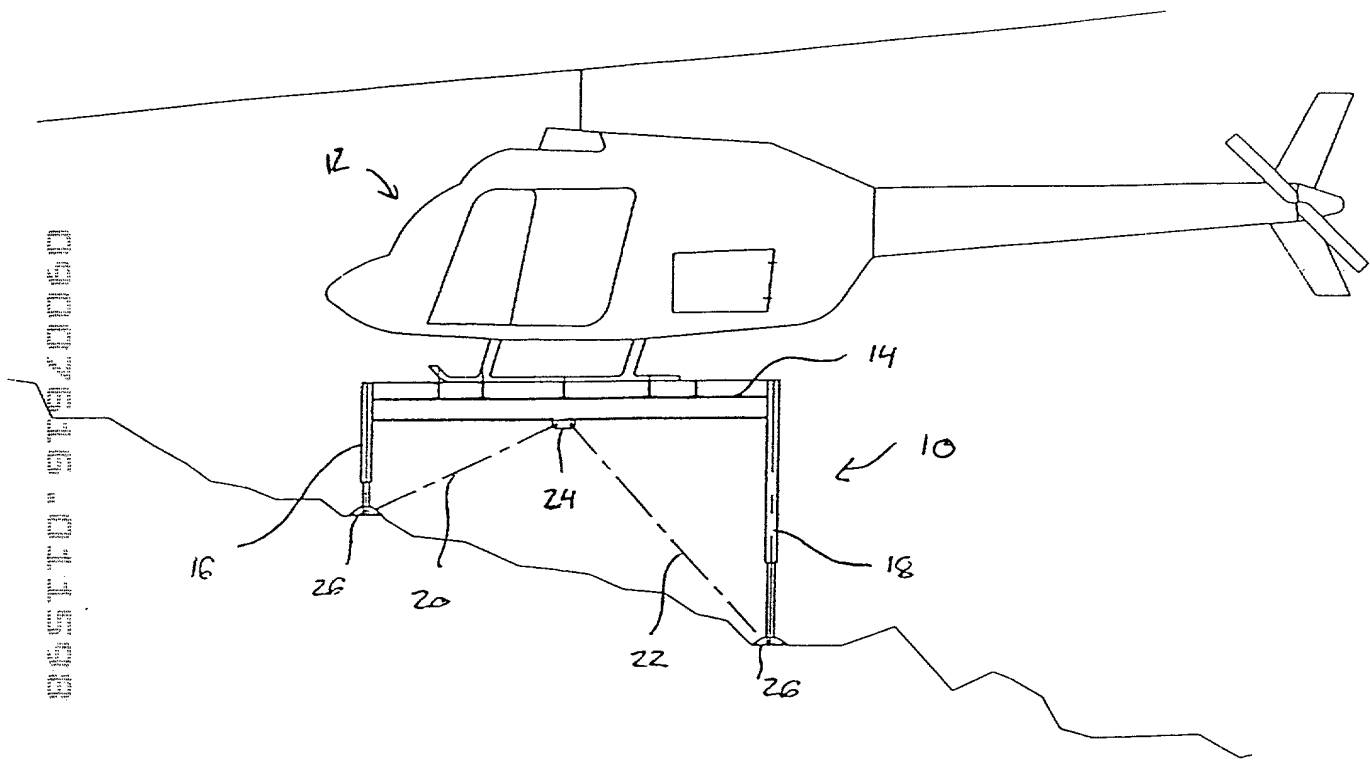
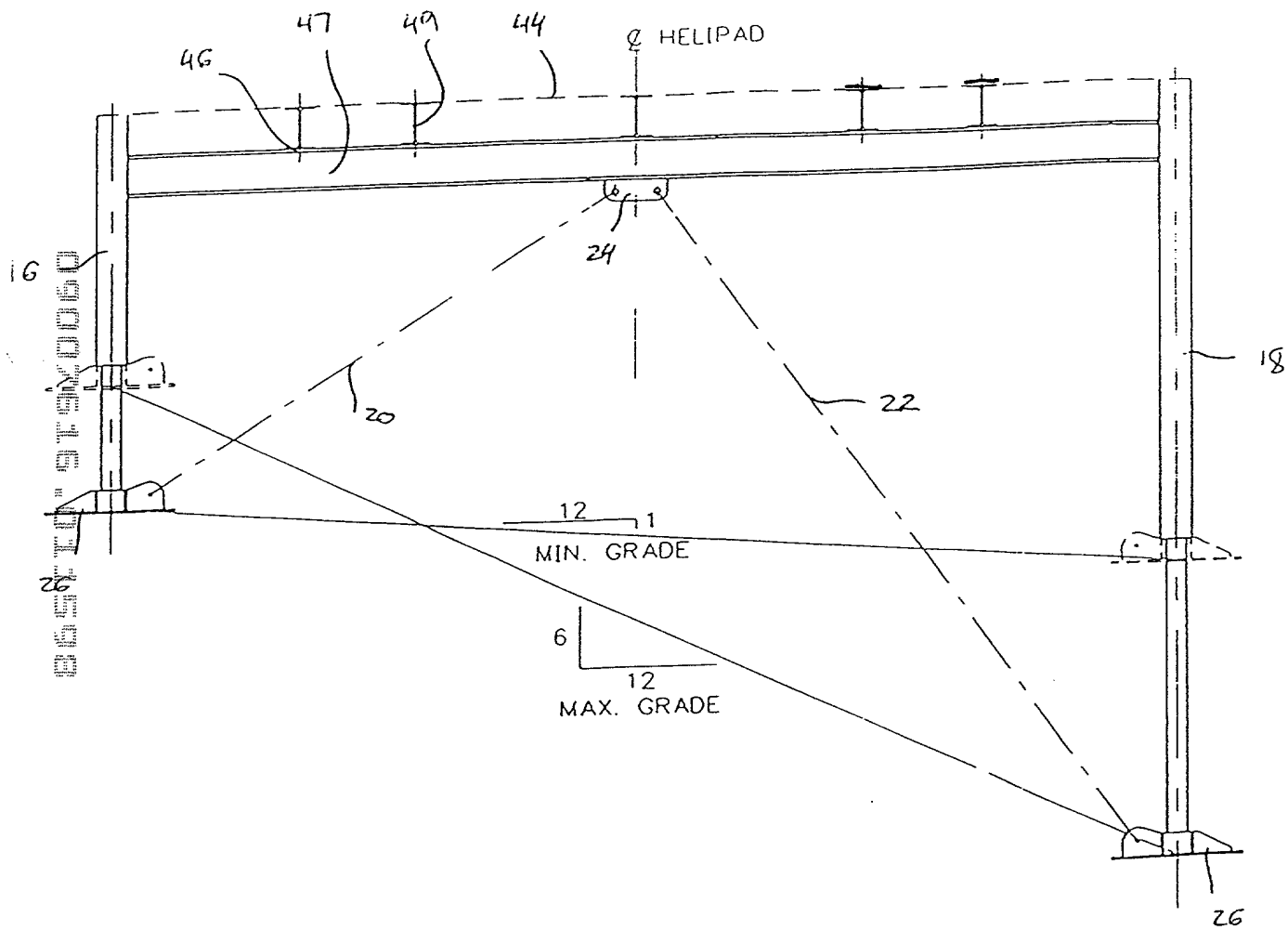




Figure 2



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065T10" 9T920060

Figure 3

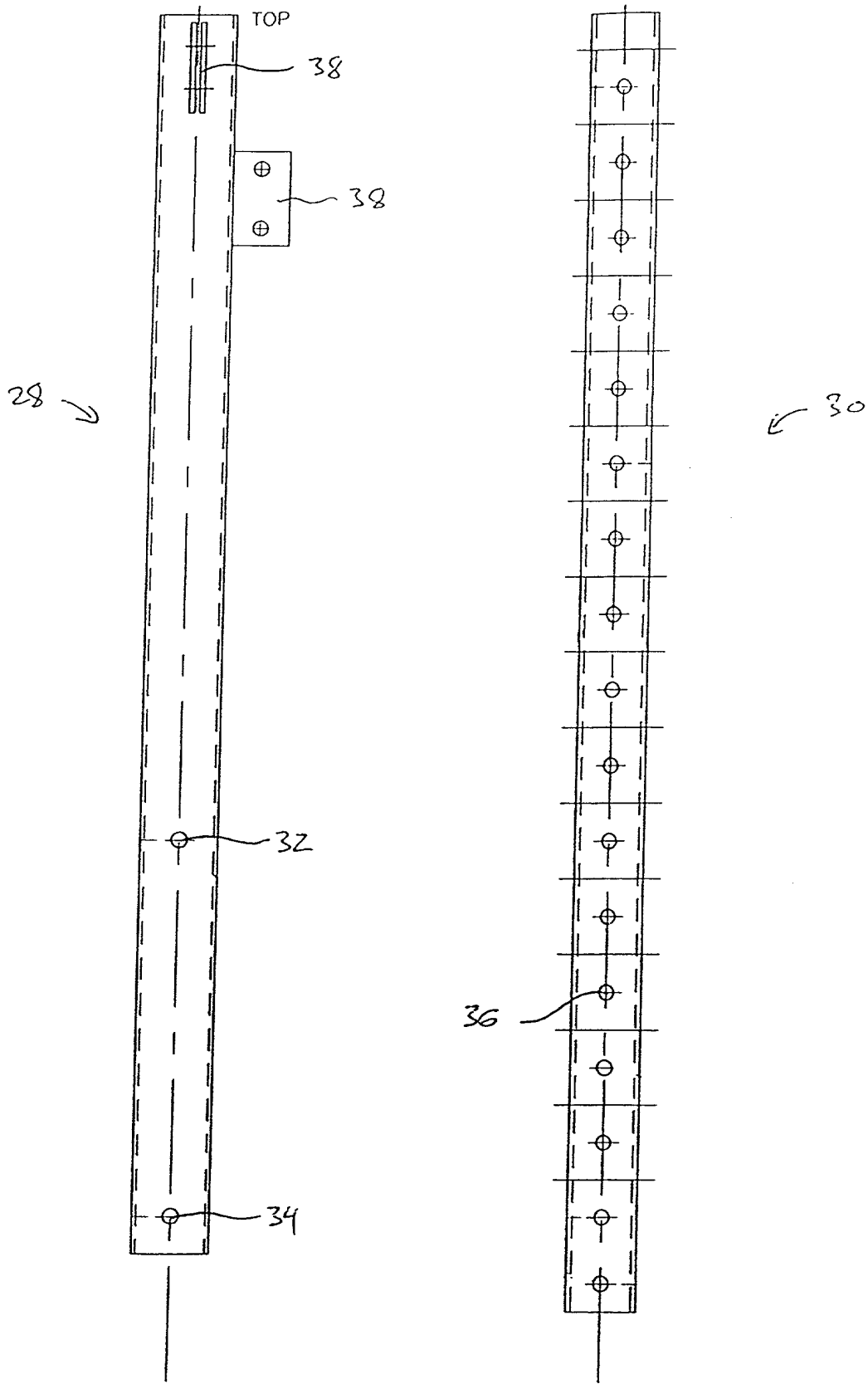


Figure 4

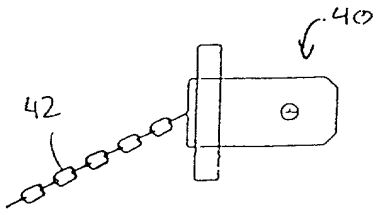


Figure 5

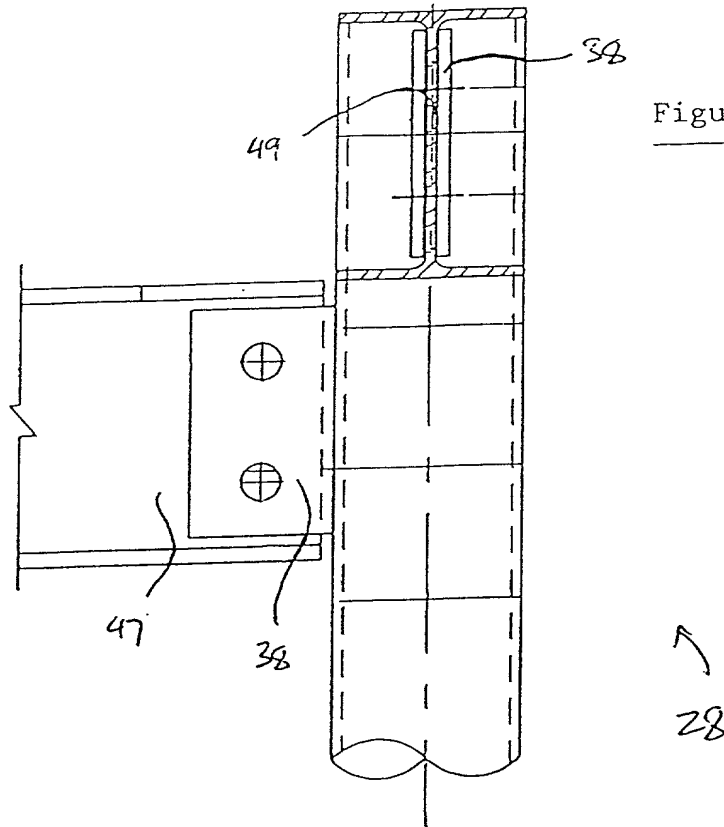
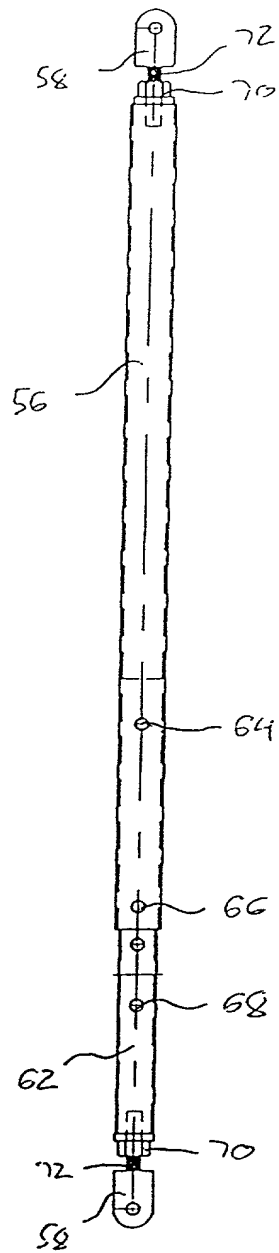


Figure 6



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Figure 7

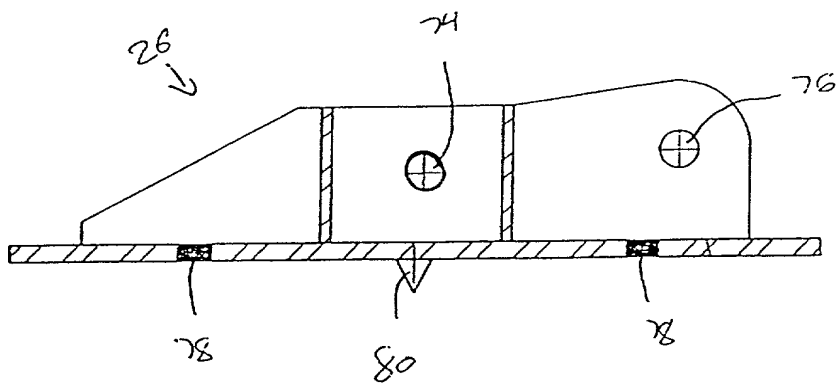


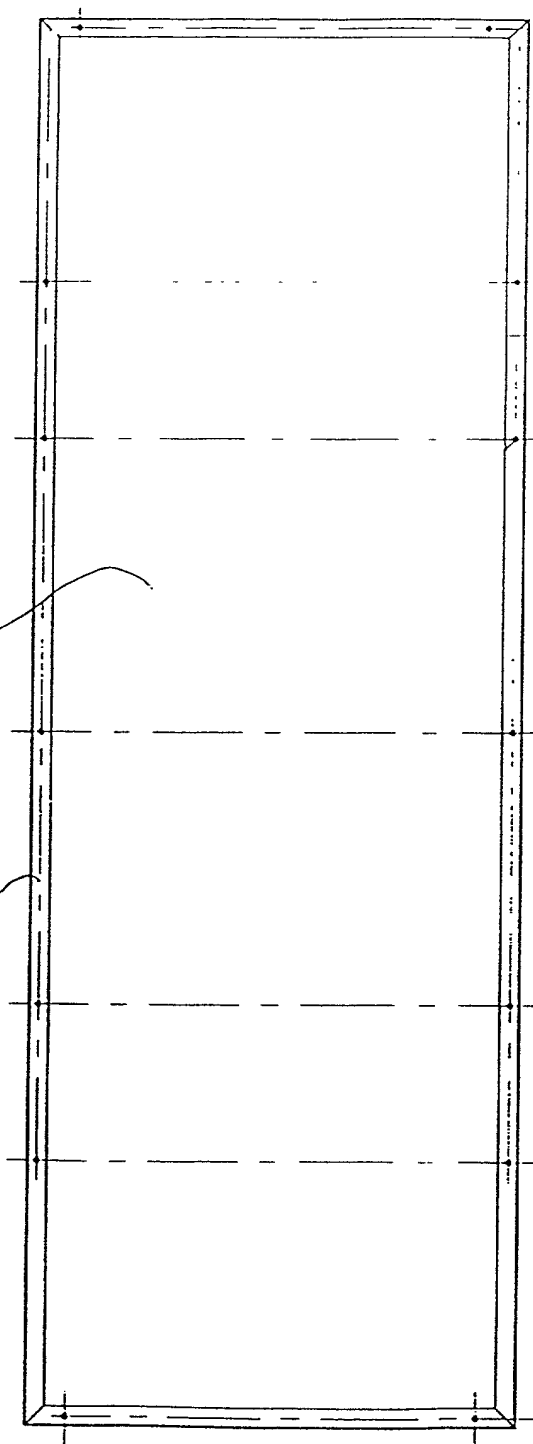
Figure 8

09007616-011598

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Applicant or Patentee: Richard Brown

Serial or Patent No.: \_\_\_\_\_ Attorney's Docket No.: BR003/0426/US

Filed or Issued: \_\_\_\_\_

For: PORTABLE HELIPAD

VERIFIED STATEMENT (DECLARATION) CLAIMING SMALL ENTITY  
STATUS (37 C.F.R. 1.9(f) and 1.27(b)) -- INDEPENDENT INVENTOR

I, a below named inventor, I hereby declare that I qualify as an independent inventor as defined in 37 C.F.R. 1.9(c) for purposes of paying reduced fees under Section 41(a) and (b) of Title 35, United States Code, to the Patent and Trademark Office with regard to the invention entitled PORTABLE HELIPAD described in:

☒ the specification filed herewith

☐ application Serial No. \_\_\_\_\_ filed \_\_\_\_\_

☐ Patent No. \_\_\_\_\_ issued \_\_\_\_\_

I have not assigned, granted, conveyed or licensed, and am under no obligation under contract or law to assign, grant, convey or license, any rights in the invention to any person who could not be classified as an independent inventor under 37 C.F.R. 1.9(c) if that person had made the invention, or to any concern which would not qualify as a small business concern under 37 C.F.R. 1.9(d) or a non-profit organization under 37 C.F.R. 1.9(e).

Each person, concern or organization to which I have assigned, granted, conveyed, or licensed or am under an obligation under contract or law to assign, grant, convey or license, any rights in the invention is listed below:

☒ no such person, concern or organization

☐ persons, concerns or organizations listed below\*

\* NOTE: Separate verified statements are required from each named person, concern or organization having rights to the invention averring to their status as small entities. (37 C.F.R. 1.27)

I acknowledge my duty to file, in this application, or patent, notification of any change in status resulting in loss of entitlement to small entity status prior to paying, or at the time of paying, the earliest of the issue fee or any maintenance fee due after the date on which status as a small entity is no longer appropriate. (37 C.F.R. 1.28(b))

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that wilful false statements and the like so made are punishable by fine or

imprisonment, or both, under Section 1001 of Title 18 of the United States Code, and that such wilful false statements may jeopardize the validity of the application, any patent issuing thereon, or any patent to which this verified statement is directed.

RICHARD BROWN

Name of Inventor

Richard Brown

Inventor's Signature

Jan 14<sup>th</sup>/98.

Date

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